

CLAIMS:

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1. A rotor core comprising a plurality of rotor laminations, each of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, and a plurality of notches having an open end at said outer periphery.

2. A rotor core in accordance with Claim 1 wherein each of said notches extends axially with respect to a center axis of said rotor core.

3. A rotor core in accordance with Claim 2 wherein each of said notches is coextensive with a respective one of said slots.

4. A rotor core in accordance with Claim 1 wherein each of said notches extend axially with respect to a center axis of said rotor core and along an entire length of said core.

5. A rotor core in accordance with Claim 1 wherein each of said notches extend axially with respect to a center axis of said rotor core and along a portion of said core.

6. A rotor core in accordance with Claim 1 wherein a bridge of lamination material extends between at least one of said notches and a respective one of said slots.

7. A rotor core in accordance with Claim 1 wherein no bridge of lamination material extends between at least one of said notches and a respective one of said slots.

8. A rotor core in accordance with Claim 1 wherein at least one of said notches has a substantially rectangular cross sectional shape.

9. A rotor core in accordance with Claim 1 wherein at least one of said notches has an irregular cross sectional shape.

10. A rotor core in accordance with Claim 1 wherein a first notch is substantially aligned and coextensive with one of said skew portions of one of said slots in said first set of rotor laminations, and a second notch is substantially aligned and coextensive with one of said skew portions of one of said slots in said second set of rotor laminations.

11. A rotor core in accordance with Claim 1 wherein a first notch is substantially aligned, for at least a portion of length of said first notch, with one of said skew portions of one of said slots in said first set of rotor laminations, and a second notch is substantially aligned, for at least a portion of a length of said second notch, with one of said skew portions of one of said slots in said second set of rotor laminations.

12. A rotor core in accordance with Claim 1 wherein each of said slots comprises radially inner portions, and each of said notches is substantially aligned with a radial axis of one of said slot radial inner portions.

13. A rotor core in accordance with Claim 1 further comprising a third set of rotor laminations comprising a plurality of slots having skew portions extending in the first direction.

20 ^{Sub 7}_{a 5} 14. A rotor for an electric motor, said rotor comprising:

a rotor core comprising a plurality of rotor laminations, each of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at said outer periphery, and a central rotor shaft opening;

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a rotor shaft having an axis which is coaxial with a rotor core axis of rotation and extending through said central rotor shaft opening;

a plurality of secondary conductors extending through said slots; and

a plurality of permanent magnets located in said lamination notches.

5 15. A rotor in accordance with Claim 14 wherein each of said notches extend axially with respect to a center axis of said rotor core and along an entire length of said core.

10 16. A rotor in accordance with Claim 14 wherein each of said notches extend axially with respect to a center axis of said rotor core and along a portion of said core.

17. A rotor in accordance with Claim 14 wherein a bridge of lamination material extends between at least one of said notches and a respective one of said slots.

15 18. A rotor in accordance with Claim 14 wherein no bridge of lamination material extends between at least one of said notches and a respective one of said slots.

20 19. A rotor in accordance with Claim 14 wherein a first notch is substantially aligned and coextensive with one of said skew portions of one of said slots in said first set of rotor laminations, and a second notch is substantially aligned and coextensive with one of said skew portions of one of said slots in said second set of rotor laminations.

25 20. A rotor in accordance with Claim 14 wherein a first notch is substantially aligned, for at least a portion of length of said first notch, with one of said skew portions of one of said slots in said first set of rotor laminations, and a second notch is substantially aligned, for at least a portion of a length of said second

notch, with one of said skew portions of one of said slots in said second set of rotor laminations.

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21. An electric motor, comprising:

5 a stator comprising a stator core, first and second main windings, said first main winding configured to form a lower number of poles than said second main winding, said stator core forming a stator bore; and

10 a rotor comprising a rotor shaft concentrically arranged axially of said stator core, a rotor core positioned concentrically with said rotor shaft and attached thereto, said rotor core comprising a plurality of rotor laminations, each of said laminations having an outer periphery, a first set of rotor laminations comprising a plurality of slots having skew portions extending in a first direction, a second set of said rotor laminations comprising a plurality of slots having skew portions extending in a second direction, a plurality of notches having an open end at said outer periphery, a plurality of secondary conductors extending through said slots, and a
15 plurality of permanent magnets located in said lamination notches and magnetized to form a number of poles equal to the number of poles formed by said second main winding.

22. An electric motor in accordance with Claim 21 wherein a first notch is substantially aligned and coextensive with one of said skew portions of one of said slots in said first set of rotor laminations, and a second notch is substantially aligned and coextensive with one of said skew portions of one of said slots in said second set of rotor laminations.
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23. An electric motor in accordance with Claim 21 wherein a first notch is substantially aligned, for at least a portion of length of said first notch, with one of said skew portions of one of said slots in said first set of rotor laminations, and a second notch is substantially aligned, for at least a portion of a length of said second
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notch, with one of said skew portions of one of said slots in said second set of rotor laminations.

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